

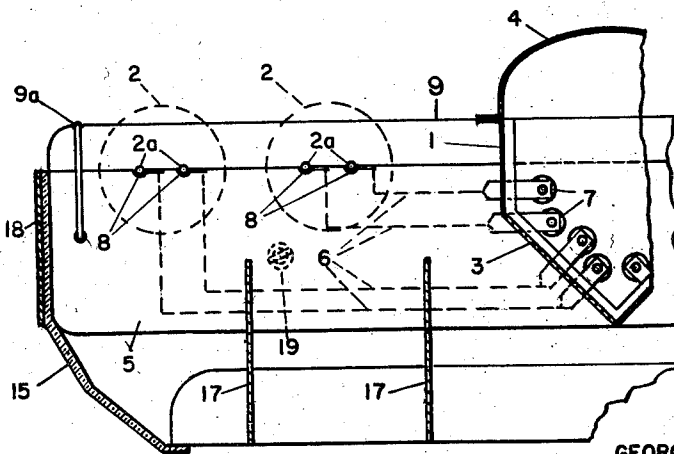
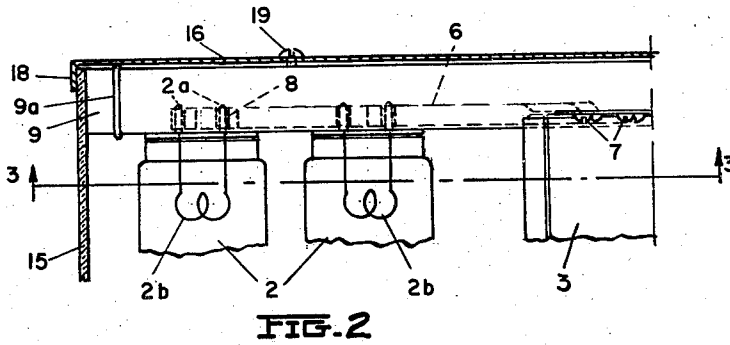
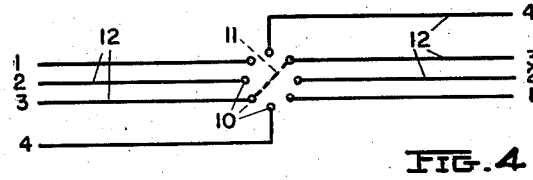
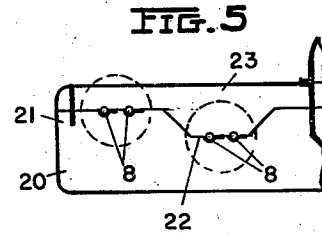
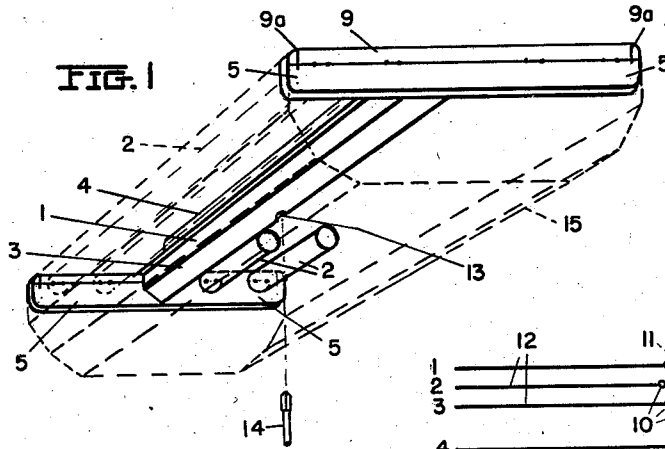
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G. P. WAKEFIELD

2,381,630

LIGHTING FIXTURE

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2,381,630

LIGHTING FIXTURE

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2 Claims. (Cl. 240—78)

The present improvements, relating as indicated to lighting fixtures, have more particular regard to lighting fixtures designed to be fitted with elongated tubular illuminators, such as the so-called fluorescent tubes which are coming into extensive use particularly as a medium for interior illumination.

Most fixtures designed thus to be fitted with tubular illuminators of the type in question have been merely adaptations of fixtures such as have heretofore been employed in connection with the more familiar incandescent lamp bulb. This is particularly true as to the means provided for supporting the illuminating units and the light diffusing elements which take the place of the old-fashioned globe and reflector. A problem is also presented by reason of the difference in wiring connections required for fluorescent units, and provision has to be made for various accessory devices.

The object of the present improvements accordingly is to provide in the first place a simple, compact, frame or chassis wherein illuminating units of the tubular type may be readily inserted and removed. A further object is to provide a simplified system of wiring in connection with such frame whereby current may be properly conducted to the units, of which a plurality is generally utilized. Still another object is to provide a frame or chassis which will be readily adaptable to the support of various types and constructions of light diffusing means suitable for use in fluorescent lighting.

To the accomplishment of the foregoing and related ends, said invention, then, consists of the means hereinafter fully described and particularly pointed out in the claims.

The annexed drawing and the following description set forth in detail certain mechanism embodying the invention, such disclosed means constituting, however, but one of various mechanical forms in which the principle of the invention may be used.

In said annexed drawing:

Fig. 1 is a perspective view seen from below and to the right of a lighting fixture embodying my present improvements;

Fig. 2 is a broken top plan view of one end of such fixture;

Fig. 3 is partially an end elevation from the inside and partly a transverse section of the portion of the structure shown in Fig. 2, the plane of the section being indicated by the line 3—3, Fig. 2;

Fig. 4 is a simplified diagram of the wiring

connections showing the manner in which the circuits to the respective illuminators may be closed in desired sequence, as is necessary where a plurality of fluorescent lighting units is to be supplied from a common source of current; and Fig. 5 illustrates a detail modification.

The main frame 1 of my improved fixture is of elongated trough-like form, as best shown in Fig. 3, and will preferably, although not necessarily, be fashioned of sheet metal, the over-all length of said member being substantially the same as that of the tubular fluorescent units 2. The fixture illustrated, it should be noted, is designed to carry four such units or illuminators, two being located in spaced relation on each side of such main frame member 1. The lower side walls 3 of the latter will desirably be inclined towards each other and provided with exterior reflecting surfaces. Said main frame member is also provided with a removable upper portion 4 which constitutes a cover, upon removal of which access to the interior of the main frame member may be readily had. The means whereby the main frame member, and thus the fixture as a whole, is suspended from the ceiling are not shown since these may be of any desired form and will vary depending upon whether the fixture is to be suspended below the ceiling or attached directly thereto. In the latter case the cover member 4 may, if desired, be omitted.

To each end of said main frame member 1 are secured oppositely extending arms 5, each such pair of arms constituting in effect an integral cross-head and preferably being molded solidly of a suitable dielectric plastic material. Such paired arms or cross-head may be permanently attached to the ends of main frame member 1 at the time they are thus molded, or the ends of the latter may be attached thereto by screws or like fastening means (not shown). In any event, conductors 6 will be molded in place in such arms 5, such conductors leading from binding posts or screw terminals 7 on that portion of the inner face of the arm which lies within hollow main frame member 1, to spaced pairs of contacts 8 on the upper face of the arm. These contacts form seats whereon the terminals 2a of the corresponding tubular illuminators 2 will rest when the fixture is assembled and thus serve both to support the latter and provide the necessary electrical connections therefor.

Each pair of terminals 2a are secured as usual in the corresponding end of the illuminator and when in circuit serves to conduct current to a corresponding filament 2b. It is considered un-

necessary to show the complete circuit arrangement as this is well illustrated. The current to the several conductors 6, which thus in turn supply to the terminals 2a of the several illuminators, will be brought to the fixture through suitable leads and the usual thermal starting unit (not shown) which may be conveniently housed in the hollow main frame member 1, whether the latter be suspended from or attached directly beneath a ceiling.

In order to facilitate the placement and removal of the illuminators in the fixture with their terminals thus supported on cross arms 5, the upper portions 9 of the latter are longitudinally split in a horizontal plane coincident with the seats 8. Such upper portion 9, when held in place by spring clips 9a or equivalent means, will serve to securely retain the illuminating units against displacement, but by releasing and lifting off such upper portions of the arms the units are immediately rendered accessible for removal.

Since in operation of fluorescent lighting units the filaments of the several tubular illuminators will require to be individually preliminarily heated before the high voltage current is supplied to the illuminator, the special switching arrangement diagrammatically illustrated in Fig. 4 is provided. As there shown, a series of paired contacts 10 are so arranged, e. g. in a circle, so that a rotating switch member 11 may successively connect pairs of said contacts which are in turn connected by conductors 12 with the binding posts 7 at the respective ends of the main frame member 1, the arrangement being such that each pair of conductors 6, which are intended to supply current to the respective illuminating units, are successively thus supplied first with the necessary current for heating the filaments and then with the high voltage current which produces the discharge from one filament to the other, causing the unit to glow.

The switch 11 may be conveniently located centrally in the hollow main frame member so as to be operable through an opening 13 in the bottom wall thereof by means of a detachable operating tool 14 (see Fig. 1).

As previously indicated, my improved lighting fixture is designed to be utilized with various types and constructions of light diffusing means. By way of illustration there is shown in dotted outline in Fig. 1 and in broken section in Figs. 2 and 3 a familiar form of such light diffusing means comprising translucent side panels 15, end plates 16 and a louver assembly 17 carried in the lower portion of the box-like structure formed by said side panels and end plates. While the latter are shown as separate parts held together by frame members 18, they may, if desired, be molded out of suitable plastic material in the form of a unitary structure.

In any event, the structure inclusive of the elements just described will be of such size and shape that it may be fitted over and enclose the frame of the fixture heretofore described, together with the several illuminators carried by the latter. In order to hold such light diffusing means in place, the component end plates 16 will be detachably secured by screws or like means 19 to the cross arms 5 of the fixture frame. The entire light diffuser member, whatever its particular construction and whether it consists merely of translucent walls or include a louver, reflectors and the like, may thus be readily attached to and detached from the frame as an independent unit.

In lighting fixtures of the type described where a plurality of tubular illuminators is employed, it is sometimes considered desirable to dispose such illuminators at different elevations. My improved construction of frame may be readily adapted to such arrangement of the illuminators by a modification in the form of the cross arms at the ends of the main frame member. Thus, as illustrated in Fig. 5, such modified cross arm 20 has its upper face formed with steps 21 and 22 which lie on different levels and the upper cover portion 23 of the arm is made of complementary form. By locating the contacts 8, whereon the terminals of the illuminator when in place are seated, on the steps, such illuminators will be held in the fixture frame at correspondingly different elevations.

From the foregoing description of the construction and assembly of my improved fixture, it will be seen that the component elements of the frame are of simple, yet sturdy, construction and that they may be readily fabricated and assembled either in the factory, or, if shipped in knocked-down condition, on the job. When in use the insertion and removal of the tubular lighting units is an extremely simple matter and can be accomplished without the use of any tool wherever the fixture is supported so as to be accessible from above. At the most, the light diffusing structure only will require to be removed in order to get access to the cross arms whereon the illuminators are supported. Such light diffusing structure, it will be noted, instead of being made up of parts separately attached to the frame, constitutes an independent structure which may be attached and removed in its entirety, inclusive of side panels, end walls and louver, where the latter is utilized.

It is noted that certain general features of construction disclosed but not claimed herein are presented in my co-pending application filed November 15, 1944, Serial No. 563,483.

Other modes of applying the principle of my invention may be employed instead of the one explained, change being made as regards the mechanism herein disclosed, provided the means stated by any of the following claims or the equivalent of such stated means be employed.

I therefore particularly point out and distinctly claim as my invention:

1. In a lighting fixture of the type designed to be fitted with elongated, tubular illuminators having projecting terminals at their respective ends, the combination of an elongated hollow, main frame member approximately the same length as such illuminators, the upper portion of said main frame member being in the form of a removable cover to permit access to the interior thereof, a cross arm of solidly molded dielectric plastic material secured to each end of said main member, spaced seats on the upper faces of said arms constituting electrical contacts adapted directly to receive the terminals on the corresponding ends of a plurality of such illuminators upon downward placement thereof and thereby support the latter in substantially parallel relation, conductors embedded in said arms and extending from within the respective ends of said main frame to said seats, respectively, and members removably secured to said arms adapted to retain such illuminator terminals in place on their seats.

2. In a lighting fixture of the type designed to be fitted with elongated, tubular illuminators, the combination of an elongated main frame member

of approximately the same length as such illuminators, laterally extending arms secured to each end of said main frame member and adapted to engage the corresponding ends of such illuminators and thereby support the latter in substantially parallel relation, said arms having upper removable hold-down portions to cooperate

5 with the ends of the illuminators and an independent unitary light diffusing structure including translucent side panels, end walls and a louver, said end walls being adapted to over-lie the ends of said main frame member and said arms, and detachably secured thereto.

GEORGE P. WAKEFIELD.